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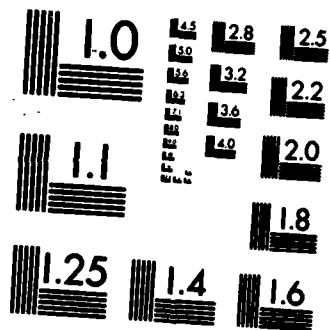
CULTURAL INVESTIGATION OF THE BANK STABILIZATION  
PROJECT BELOW KEYS CRO. (U) NORTH DAKOTA UNIV GRAND  
FORKS DEPT OF ANTHROPOLOGY AND ARCHAEO. 30 MAR 78  
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CULTURAL RESOURCES INVESTIGATION OF THE BANK STABILIZATION PROJECT  
BELOW KEYE'S CROSSING, LAKE ASHTABULA, NORTH DAKOTA

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Prepared by

Department of Anthropology and Archaeology  
University of North Dakota  
Grand Forks, North Dakota

March 30, 1978

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## Introduction

In accordance with the work order terms attached to Purchase Requisition No. NCS-ER-R-570, the Department of Anthropology and Archaeology, University of North Dakota contracted with the St. Paul District, Corps of Engineers for a cultural resources investigation of the bank stabilization project below Keye's Crossing at Lake Ashtabula in North Dakota. The investigation was conducted by Richard A. Fox, Research Associate in Archaeology, on March 1 and March 8, 1978. No cultural resources were discovered.

## Project Description

The bank stabilization program at Keye's Crossing, Lake Ashtabula, is a project designed to test the feasibility of stabilizing shoreline erosion in hopes of prolonging the life of the reservoir. Stabilization is accomplished by placing field stone (rip-rap) along the shoreline at cutbanks of 1.2 meters or more in height. These cutbanks are particularly susceptible to lacustrine erosive processes. Placement of the rip-rap is designed to minimize shoreline erosion and slumping thereby reducing lake sedimentation.

At Keye's Crossing, rip-rap was placed along approximately 762 meters of the western shoreline at Lake Ashtabula. This area is located in the NE $\frac{1}{4}$  of Section 13, Township 143 North, Range 58 West. Apparently field stone was obtained from the numerous rock piles found throughout the cultivated fields in the area. The stone is part of the glacial till topography formed in Pleistocene times. A stockpile area for the rip-rap was established above the shoreline (NE $\frac{1}{4}$ , NE $\frac{1}{4}$  of Section 13, T.143N, R.58W) at



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the rim of what may be a kame terrace. This area was scraped (approximately two acres) clear of snow, vegetation and obstructions by bulldozers. Dozers were also used to clear snow and obstructions from the shoreline. Front loaders were utilized to clear the cutbanks prior to placement of the rip-rap. Heavy equipment operators used the frozen lake to gain access and operate along the shoreline.

#### Survey Methodology

March 1, 1978: The cutbanks along the shoreline were inspected while clearing operations were in progress. The entire length of the cutbanks designated for rip-rap had been exposed. This facilitated inspection of the vertical surfaces. However, heavy snow cover would not allow inspection of the shore. No cultural resources were discovered protruding from the cutbanks. The stockpile area that was not covered by rocks was also surveyed but no cultural remains were discovered. The existing access roads were snow covered and could not be surveyed. Approximately two hours were spent inspecting the entire site.

March 8, 1978: The second trip was designed to investigate field conditions after the rip-rap had been put into place. Warmer weather had made vehicular traffic impossible along the ice so the cutbank areas were inspected from above. Apparently all or nearly all of the rip-rap had been placed by this date. No new exposed areas were evident and no cultural resources were located. The stone stockpile had been reduced considerably but a substantial amount remained. The newly exposed surfaces were investigated without finding any cultural evidence. Some of the snow had melted from adjacent areas along the terrace. Most of this

acreage had been previously disturbed by gravel mining and ancillary operations. It is doubtful that any cultural resources, if previously extant, could have survived these activities.

#### Previous Archaeology

To date, no modern intensive and inclusive cultural resource survey has been conducted in or adjacent to the Lake Ashtabula Reservoir. The area is not, however, lacking in archaeological resources. As early as the early 1880's, investigators were aware of the archaeological significance of the Sheyenne River. Lewis (1889) recorded a rock alignment site (32BA11) in Section 35, T.143N, R.58W (see Fig. 1). Smith conducted investigations in the area in 1882. They are described, along with 32BA11, in an archaeological report published at the turn of the century (Smith 1906).

Today, despite the lack of adequate inventories, we know of twelve other archaeological sites in the area surrounding Lake Ashtabula. Eight are occupation sites, four are burial mounds. Unfortunately, seven of the occupation sites are believed to have been inundated by the lake (Johnson et al. 1974:40). The others are still extant.

Some of these sites were reported by Kivett (1948) in conjunction with his 1947 spot check survey prior to completion of the reservoir. In 1949, Hewes (1949) reported on excavations at three burial mounds adjacent to Lake Ashtabula. Wheeler (1952) and Neuman (1967) made additional records on a selective basis of some of these same sites. More recently, Good (personal communication) removed an exposed burial from a lake terrace just east of Keyes Crossing. Carmichael (Johnson et al. 1974:40ff) investigated the condition of known sites in the

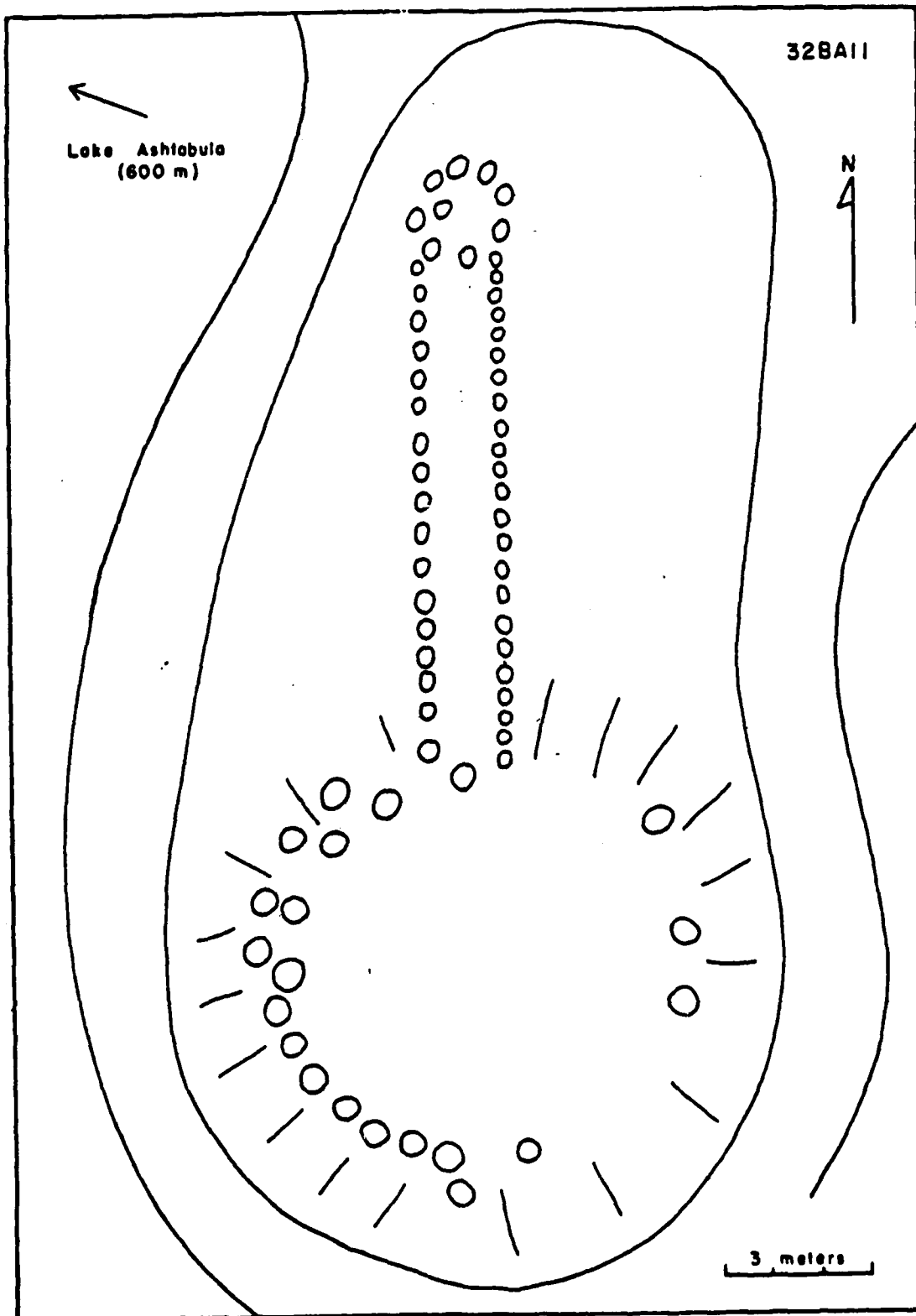


Figure 1. Rock alignment of 32BA11.

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area as part of an environmental impact assessment of Lake Ashtabula. He also recorded an additional mound site in the summer of 1974. Finally, Schneider (1977) performed a cultural resource inventory of Eggert's Landing, Lake Ashtabula. No archaeological or historical resources were discovered during his inventory.

#### Adverse Impacts of Bank Stabilization

Bank stabilization projects of any magnitude can have serious adverse affects on our non-renewable cultural resources. Specifically, at Lake Ashtabula the procurement and stockpiling of field stone without regard to archaeological concerns has the potential of damaging or destroying significant prehistoric resources. It is argued by some that because bank stabilization operations are carried out during winter months when the ground is frozen, archaeological resources, if they are encountered, will not be disturbed. This is simply not true for several reasons.

First, the seemingly innocuous task of procuring field stone from farmer's rock piles can adversely affect the integrity of burial mounds. Carmichael (Johnson et al. 1974:48) recorded one burial mound that had boulders dumped on it during field clearing operations. Without an adequate intensive survey, we have no way of knowing how many other situations like this exist. Obviously, removal of field stone, some of which may be embedded into the frozen surface, could seriously damage a mound and the archaeological relationships.

Secondly, the practice of clearing the snow from a stockpile area is potentially detrimental to archaeological resources, particularly stone features. Ideal stockpile areas are usually found on the flat,

expansive terraces nearest the area to be stabilized. Unfortunately, these areas seem to have also been preferred by prehistoric human occupants because water, game, shelter and fuel were readily available. Experience has shown that these terraces do, in fact, have a high incidence of sites. Very often they contain tipi ring sites or other stone alignments that are not protected by frozen ground from the dozer's blade. Surface provenience of artifacts within a site can also be destroyed. Also, sites similar to 32BA11 (Fig. 1) run the risk of being destroyed by clearing operations.

Finally, the practice of clearing cutbanks with front loaders can jeopardize materials exposed along the vertical faces and shoreline. This problem does not seem too great, however, because only snow and snags are removed from the cutbanks. And, the ice tends to protect the shoreline surface from the heavy equipment. Also, most cultural remains along the shoreline have been previously disturbed.

Other adverse impacts related to stabilization operations are disturbances of sites when constructing access roads and setting up weigh stations and staging areas. Assuming that frozen surfaces would be cleared of snow by bulldozers, impacts similar to those described in conjunction with stockpiling activities would be relevant.

#### Beneficial Effects of Bank Stabilization

Cultural resources around the periphery of Lake Ashtabula will benefit immensely from bank stabilization programs provided the resources are identified and evaluated in the engineering planning phases. The long term results of stabilizing erosion and slumping will protect and

preserve the resources. Reduction of lake sediments will maintain the volume potential of the lake without having to periodically increase design pool elevations. Such increases regularly erode cultural resources into the lake. This is beneficial in several ways. First, such action will eliminate hastily conceived and inadequately implemented archaeological and other investigations designed to salvage cultural remains threatened by erosion. Secondly, the resources can be preserved for future problem oriented research. Economically, resource preservation is much cheaper than financing field expeditions and laboratory analyses particularly when protection is a pleasant side effect of limnological engineering concerns.

#### Recommendations

Bank stabilization operations below Keye's Crossing represent an experiment designed to evaluate the feasibility of implementing a five to eight year stabilization plan throughout the entire reservoir area. If the experiment is deemed successful and the plan is either fully or partially implemented, we recommend the following cultural resource management measures be undertaken at Lake Ashtabula.

- 1) Perform a literature and records search designed to identify known resources, to become familiar with the local and regional history and archaeology, and to develop a research design for implementing on-site investigations. The records search would also consider paleontological and architectural resources.
- 2) Initiate a reconnaissance level surface survey of acreage along the reservoir but outside of the valley. This survey

would be designed to integrate prairie adaptations as evidenced by the material archaeological remains (eg., burial mounds, rock alignments, lithic scatters) with remains in the valley environment. This strategy will facilitate and enhance interpretation of investigations recommended in the next step.

- 3) Initiate an intensive surface survey (to include archaeology, history, paleontology, historical architecture) so that unknown resources can be identified, evaluated and assessed at a significant level. This survey would be confined to the entire valley along Lake Ashtabula and to designated construction areas.
- 4) Perform salvage excavations of those resources identified in the intensive survey as in immediate danger of destruction by erosion, construction or other agents. Proper interpretation of such immediate excavations, if necessary, requires a research strategy which cannot be adequately formulated without implementation of at least the preceding Steps 1 and 2.
- 5) Insure that other mitigative measures to include preservation by avoidance, test excavations, if necessary, to assess significance, full scale excavations, preservation by constructing protective apparatus and/or other mutually acceptable management options are available. Because of the implications of the stabilization program, we assume that draining the lake or maintaining a low water level are not feasible alternatives for cultural resource protections.

We recommend that the intensive survey be performed at a very low water level, perhaps in late summer. If this is done, we can salvage much of the archaeological remains of the known and unknown inundated sites. Although the planning was fortuituous, low water at Lake Darling (Burlington Survey, September - November 1977) enabled us to recover materials normally inundated and we feel that a similar situation would exist at Lake Ashtabula. This suggestion, however, conflicts with a desire to identify resources in immediate danger of destruction by the high water levels anticipated this spring and early summer. Perhaps a reconnaissance survey to locate potential erosional or slumping areas with cultural resources could be undertaken this spring, after implementation of Steps 1 and 2.

#### REFERENCES CITED

Good, Kent N.  
P.C.

Hewes, Gordon W.  
1949 Burial Mounds in the Baldhill Area, North Dakota. American Antiquity, Vol.14, No.4, Part I.

Johnson, Gary E., et al.  
1974 Environmental Impact Assessment of Baldhill Dam and Lake Ashtabula, North Dakota. Research Report No.8, Institute for Ecological Studies, University of North Dakota, Grand Forks.

Kivett, Marvin F.  
1948 Preliminary Appraisal of the Archaeological and Paleontological Resources of the Baldhill Reservoir, North Dakota. Unpublished manuscript on file with Midwest Archeological Research Center, U.S. National Park Service, Lincoln, Nebraska.

Lewis, Theodore H.  
1889 Stone Monuments in South Dakota. American Anthropologist, Vol.2, No.2.

Neuman, Robert  
1967 Radiocarbon-Dated Archaeological Remains on the Northern and Central Great Plains. American Antiquity, Vol.32, No.4.

Schneider, Fred  
1977 Cultural Resource Inventory of Eggert's Landing Lake Ashtabula, North Dakota. Department of Anthropology and Archaeology, University of North Dakota, Grand Forks.

Smith, Harlan I.  
1960 The Data of the Archaeology of the Dakotas. Collections of the State Historical Society of North Dakota, Vol.1.

Wheeler, Richard P.  
1952 Site Form on File, Department of Anthropology and Archaeology, University of North Dakota, Grand Forks.

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